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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,551	04/11/2001	Soo Hyun Kim	434/1/002	2003

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EXAMINER
CURTIS, CRAIG

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,551	KIM ET AL.	
	Examiner	Art Unit	
	Craig H. Curtis	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _ is/are withdrawn from consideration

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on _____ is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Disposition of the Instant Application

- This Office action is responsive to Applicants' Amendment B filed on 8 March 2003, which has been made of record in the file as Paper No. 6.
- By this amendment, Applicants have amended Figs. 1 & 2 to label same with the designation PRIOR ART, thus overcoming the objection to the drawings set forth in the previous Office action, and have amended independent claims 1 and 11, and have newly added claim 12.
- Claims 1-12 are currently pending in the instant application.

Claim Objections

1. Claims 1-12 are objected to because of the following informalities: With regard to claims 1-10 and 12, the phrase "...a signal-processing unit used for *reproducing* a combined distribution of light intensities measured by the light intensity measuring arrangement of the spectrometer head at each of the two different positions...(emphasis added)" is misdescriptive in that said "...combined distribution of light..." may only be considered as being, for the sake of example, *generated* or *created* or *combined* or *produced* or *added*, etc., but in no instance can said "...combined distribution of light..." legitimately be considered as being *reproduced*, since such distribution of light--i.e., said combined distribution of light--does not exist prior to combining said distribution of light intensities by the light intensity measuring arrangement of the spectrometer head at each of the two different positions. For this reason, Applicants

are respectfully requested to change the recitation "reproducing" to a word to their liking (e.g., generating, creating, combining, producing, etc.) that faithfully represents the invention disclosed in the instant application. A similar problem exists with respect to the "...reproducing a combined light intensity distribution of the target sample by the signal processing unit corresponding to measured light intensities at the first and second positions." limitation recited in claim 11. ***Appropriate correction is required.***

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art in view of Knoll et al.'s "Improving Spectroscopic Techniques by a Scanning Multichannel Method."

Applicants' Admitted Prior Art (Figs. 1 and 2) discloses the invention as claimed--A spectrophotometer and a spectrophotometry method, comprising:

a light source (10) used for emitting a light beam having a predetermined wavelength range;

a light guide (20) for guiding the light beam from the said light source to a target sample (30);

a spectrometer head (40) including:

a light diffractor (50) for diffracting the light beam transmitted through the target sample to produce optical spectra (see Fig. 1),

a light reflector (60) for reflecting the diffracted light from the light diffractor (see Fig. 1),

a light intensity measuring arrangement (70, 80) for measuring intensity of incident light reflected by the light reflector,

wherein said light guide comprising a multimode optical fiber (well known).

wherein said light diffractor comprises a reflective diffraction grating (see Fig. 1),

wherein said light reflector comprises a concave mirror (see Fig. 1),

wherein said light intensity measuring arrangement comprises a photodiode array (70, 80), with a plurality of photodiodes linearly arrangement (read: arranged) on a longitudinal mount at regular physical intervals (see Fig. 1), and

a signal processing unit (90) used for reproducing a distribution of light intensities measured by the light intensity measuring arrangement of the spectrometer head--EXCEPT FOR additional teachings of: (1) a drive for reciprocating the light intensity measuring arrangement within a predetermined range to at least two different positions; (2) a stop for limiting a reciprocating movement of the light intensity measuring arrangement; (3) wherein said signal-processing unit for reproducing a distribution of light intensities measured by the light intensity measuring arrangement of the spectrometer head reproduces (read: generates) a combined distribution of light intensities at each of said [at least] two different positions; and (4) wherein at least one of said two different positions is defined by said light

intensity measuring arrangement against said stop, as well as the following corresponding method step teachings: a first intensity measurement step of measuring light intensities of said incident optical spectra by said photodiode array at a first position; a step of moving said photodiode array using a drive by a distance equal to a physical interval between photodiodes of said photodiode array to a second position; repeating said steps of light transmitting, light diffraction and a light reflection; a second intensity measurement step of measuring light intensities of said incident optical spectra by said photodiode array to said intervals at the second position; and reproducing (read: generating) a combined light intensity distribution of the target sample by the signal-processing unit corresponding to measured light intensities at the first and second positions.

Knoll et al., however, teaches a drive (See Page 776, 2¶ under the THE SCANNING MULTICHANNEL TECHNIQUE (SMT) heading; also see Page 777, column 2, ll. 5-8) for reciprocating a light intensity measuring arrangement within a predetermined range to at least two different positions (inherent), and a stop (inherent) for limiting a reciprocating movement of said light intensity measuring arrangement. It would have been obvious to one having ordinary skill in the art at the time the device and method of Applicants' invention were conceived to have modified Applicants' Admitted Prior Art device and method such that they further include a drive for reciprocating a light intensity measuring arrangement and a stop for limiting a reciprocating movement of the light intensity measuring arrangement, and wherein said signal-processing unit used for reproducing a distribution of light intensities measured by the light intensity measuring arrangement of said spectrometer head reproduce a combined

distribution of light intensities at each of said two different positions (see Page 777, column 2, ll. 8-13), as taught by Knoll et al., for at least the purpose of increasing both the signal-to-noise ratio and overall functionality of said spectrophotometer and spectrophotometric method.

3. Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art in view of Knoll et al, as applied above to claim 1, and further in view of Israelachvili (5,861,954).

With regard to claims 6-8, the combination discloses the invention as set forth above EXCEPT FOR teachings wherein said drive comprises: a piezoelectric drive unit physically expandable or contractible in accordance with a level of applied voltage; a bimorph piezoelectric drive plate physically expandable and contractible in accordance with a level of an applied voltage; and a bimorph piezoelectric fixing plate cemented together with said bimorph piezoelectric drive plate, said bimorph piezoelectric fixing plate being physically expandable and contractible in accordance with the level of the applied voltage.

Israelachvili, however, provides teachings of both a piezoelectric drive unit physically expandable or contractible in accordance with a level of applied voltage; a bimorph piezoelectric drive plate physically expandable and contractible in accordance with a level of an applied voltage; and a bimorph piezoelectric fixing plate cemented together with said bimorph piezoelectric drive plate, said bimorph piezoelectric fixing plate being physically expandable and contractible in accordance with the level of the applied voltage

(see col. 8, ll. 62-67 and cols. 9-20). It would have been obvious to one having ordinary skill in the art at the time the Applicants' invention was made to have modified the device and method teachings of the combination such that they further comprise a piezoelectric drive unit physically expandable or contractible in accordance with a level of applied voltage; a bimorph piezoelectric drive plate physically expandable and contractible in accordance with a level of an applied voltage; and a bimorph piezoelectric fixing plate cemented together with said bimorph piezoelectric drive plate, said bimorph piezoelectric fixing plate being physically expandable and contractible in accordance with the level of the applied voltage, as taught by Israelachvili, for at least the purpose of further increasing not only the precision with which said drive could be positioned but the range over which it could be precisely positioned.

With regard to claim 10, the combination further in view of Israelachvili inherently, if not explicitly, provides said teaching wherein said bimorph piezoelectric drive plate and said bimorph piezoelectric fixing plate cemented together are different from each other in their coefficients of expansion and coefficients of contraction in response to an applied voltage.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art in view of Knoll et al. and further in view of Israelachvili (5,861,954), as applied above to claim 6, and still further in view of Scurlock (3,889,166).

The combination discloses the invention as claimed EXCEPT FOR a teaching wherein a displacement amplifier is attached to said piezoelectric drive unit for amplifying a displacement of the piezoelectric drive unit.

Scurlock, however, provides an explicit teaching (see Fig. 2) of a displacement amplifier (44) attached to a piezoelectric drive unit (14, 15; 19, 20) for amplifying a displacement of said piezoelectric drive unit. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device and method teachings of the combination such that a displacement amplifier be attached to said piezoelectric drive unit for amplifying a displacement of said piezoelectric drive unit, as explicitly taught by Scurlock, for at least the purpose of efficiently effecting mechanical displacement(s) of said piezoelectric drive unit.

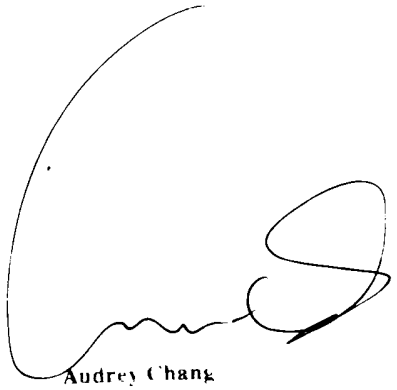
Response to Arguments

5. Applicants' arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7722.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



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Group Art Unit 2872
26 June 2003